

MSE-Optimal Scalar Quantizers with Given Numbers of Levels

All densities are symmetric about the origin and have variance 1. All quantizers are symmetric about the origin. The data is taken from Jayant and Noll, p. 134,135. Only the nonnegative thresholds and levels are shown. The data for larger values of R , and for M not a power of two, can be found in Jain's image processing book, pp. 104-111.

#levels =	2		4		8		16	
	thresh	level	thresh	level	thresh	level	thresh	level
u n i f o r m	0.000	0.8660	0.000	0.433	0.000	0.217	0.000	0.109
			0.866	1.299	0.433	0.650	0.217	0.326
					0.866	1.083	0.433	0.542
					1.299	1.516	0.650	0.759
							0.866	0.975
							1.083	1.192
							1.299	1.408
							1.516	1.624
MSE =	0.25		0.0625		0.0156		0.00391	
G a u s s i a n	0.000	0.798	0.000	0.453	0.000	0.245	0.000	0.128
			0.982	1.510	0.501	0.756	0.258	0.388
					1.050	1.344	0.522	0.657
					1.748	2.152	0.800	0.942
							1.099	1.256
							1.437	1.618
							1.844	2.069
							2.401	2.733
MSE =	0.363		0.117		0.0345		0.00951	
L a p l a c i a n	0.000	0.707	0.000	0.420	0.000	0.233	0.000	0.124
			1.127	1.834	0.533	0.833	0.264	0.405
					1.253	1.673	0.567	0.729
					2.380	3.087	0.920	1.111
							1.345	1.578
							1.878	2.178
							2.597	3.017
							3.725	4.432
MSE =	0.500		0.176		0.0544		0.0154	